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AUTHOR Wiley, Susan D.; And Others
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ABSTRACT

A way to support the educational ethnographer in developing a perspective on the art of qualitative research during an introductory course on qualitative research methods is explored through a study of how novice researchers begin to learn the elements and processes of qualitative research. A second purpose of the study is to investigate the use of a new generation of computer software and how it supports or constrains the use of qualitative data. Students in a class on qualitative research methods at the University of California at Santa Barbara (12 in a morning session and 14 in an evening session) practiced the steps in the research cycle while carrying out a simulation of a study of the life of graduate students in education. Students were introduced, through lecture, readings, and demonstration, to common research tools, such as audiotape recording, word processing, and software for qualitative research. Study data provide evidence that the students practiced the "how" of qualitative research in a way that resulted in a beginning level of understanding the "why." Researchers predicted that students would recall the course as a concrete experience to build on when encountering concepts and understandings of qualitative research in the future. It was also apparent that computer capabilities could be used to a much greater advantage for teaching and doing qualitative research. Appendixes present the guided interview schedule, a guide for selecting software for data analysis, and a chart of views for analysis. (Contains one figure and two tables.) (SLD)

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Twenty-first Century Tools for Qualitative Data Analysis

Susan D. Wiley, Carolyn R. Frank, and Jenny Cook-Gumperz

University of California, Santa Barbara

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This paper documents, explores, and explains how novice researchers begin to build an understanding of the elements and processes of qualitative research while practicing the "how" of qualitative research methods. At the same time the ways in which new computer software for qualitative data analysis can support and constrain analysis is explored. In addition several unexpected findings emerge from the study that call for further exploration. One of these is that if qualitative researchers and instructors of qualitative research courses plan for use of the advantages that can be provided by computers, larger amounts of data could be effectively analyzed in less time.

Theoretical Perspective

The past 20 years have seen an enormous increase of interest in qualitative research in education. From being regarded as an interesting way of enriching primarily quantitative research findings, qualitative research has now moved into a central position as a research paradigm (Erickson, 1984; Lancy, 1993; Wolcott, 1990). During this time the ranges of studies and the debates on the best way to structure research, and to teach methods, have intensified (Green & Wallat, 1981; Hammersley, 1983; Jacob, 1987). At the base of the qualitative revolution lies an ethnographic approach that requires researchers to enter into the lifeworld of the groups to be studied and to understand their ways of thinking, acting and believing that are demonstrated in daily practice. In the words of Spradley, the author of one of the perennial favorites among pedagogical texts, "Ethnography offers all of us the chance to step outside our narrow cultural backgrounds, to set aside our socially inherited ethnocentrism, if only for a brief period, and to apprehend the world from the viewpoint of other human beings who live by different meaning systems" (Spradley, 1980, pp. vii-viii). However the balance between the researcher's participant involvement in the "native" scene on the one hand, and the formulation of researchable questions on the other, has always been a delicate one. Different theoretical traditions of research have placed the emphasis of the research endeavor either more on the side of a fully rounded understanding of the anthropological "other," or more on the construction of an evidential trail that other researchers can use to gain access to such knowledge (Clifford & Marcus, 1986). In other words, the qualitative research dilemma often revolves around the problem of whether it is best to assume that the main methodological aim of research is to get to "know the mind of the other" or whether it is intended to get to know the mind of other researchers as they go about such a search.

Educational research can often have research parameters that render the making of decisions about research methods all the more critical since studies have pre-determined time scales that prohibit entry into the field other than on certain, precise occasions (Erickson, 1982; Mehan, 1978). In contrast to classical ethnographic research, most educational research problems have a dynamic which is founded in institutional issues special to national agendas and organizations. Pressures of time as well as ideology often shape the way in which answers will be sought. The shift towards micro-ethnographic traditions with their interpretative analysis, has provided a way of subverting the time, money and institutional constraints of long-term research by seeing "the whole world in a grain of sand." For example, providing a full inquiry into the specifics of daily practices in classroom activities can stand as the symbolic center of a universe of meaning making for all the participants (Zaharlick & Green, 1991).

Recent criticisms of the exclusively micro-ethnographic methodology have suggested that researchable educational issues require a wider range of viewpoints than can be provided by intensive and purely descriptive ethnographic observation (Ogbu, 1987). The latter necessarily tend to focus on in-depth accounts of single situations on the assumption that this lends authenticity to the ethnographer's account and so takes care of the methodological issue of validity. However in educational research the need to seek answers to a range of policy driven problems suggests that training in doing educational research needs to include some form of comparative, qualitative analysis of ethnographic accounts. As Gumperz & Cook-Gumperz (1979) suggest, there is a need to look "beyond ethnography" to show how the immediate observations are linked to others in a chain of argument or as Strauss & Corbin (1990) have recently shown there is a developmental research cycle of qualitative argumentation in which inductive observation must be transformed into testable research questions.

It follows therefore that ethnographers must be trained not just to observe but to integrate their insights and findings into larger bodies of data in order to arrive at broader generalizations that will enable them to reformulate their initial findings and then re-enter the ethnographic scene with a new perspective. In this way they can treat ethnographic observations as source material from which to generate new comparative hypotheses, and subsequently to turn the initial observations into an evidential chain of reasoning. The initial observable events then lead to outcomes which might have been impossible to predict without the detailed ethnography. In other words the essential artfulness of qualitative research lies in the possibility of arriving at what might seem like counter-intuitive hypotheses from an initial collection of simple descriptions but ones in which the detail makes possible the realization and reformulation of new insights. With this in view, graduate schools might provide context that allows the novice researcher to build an understanding of the artfulness of qualitative research.

Purposes and Context

The primary purpose of this study was to explore a way to support the beginning educational ethnographer in developing such a perspective of the art of qualitative educational research within the limited time and resources of one introductory graduate course on qualitative research methods. Since project based learning can both motivate and facilitate faster learning (McKeachie 1994, p.154), the professor and two teaching assistants developed a project for an introductory course in which the students were to construct (Bruner, 1990; Wells, 1994) an understanding of the elements and processes of the qualitative research cycle through experiencing the evidential chain of reasoning.

As the students and teachers together were involved in gathering, transcribing, organizing, and doing initial analysis of a large amount of generated data, it was hoped that the students would realize the need to step back into the research cycle to collect more data after initial analysis (Spradley, 1979). In other words, students would work with data to inductively build up hypotheses and then deductively test hypotheses by examining data to refine their questions in preparation to reenter the field to observe, describe, and compare.

The secondary purpose of this study was to investigate the use of the new generation of computer software and how it supports or constrains the analysis of qualitative data. One problem associated with qualitative research is managing an enormous amount of accumulated narrative data. Analyzing this data can present problems because of time constraints and availability of ways of sorting and cataloging the huge volume of information. Many qualitative researchers are still relying on scissors and paste or limited word processors. Yet, recently new software with easier to learn formats and extensive capabilities for organizing and analyzing text-based data have been developed. Weitzman & Miles (1995) have thoroughly reviewed this new software. The authors' evaluations of the advantages and disadvantages of the current relevant software provided the motivation and the information for selecting software to introduce to students for use with their projects. In this research study we gathered and analyzed data on how students used this software tool for qualitative data analysis and then registered their perspectives on the comparative value of the software.

Research Questions

How would these students new to qualitative research carry out the steps of the research cycle? What would be the differences between the ways students would carry out the same project using the same data? Would students realize how the project was just one round of the research cycle and that the next step was to decide how and where to step back into it.

How does the new generation of computer software support or constrain the analysis of qualitative data ? How do students in Graduate Schools of Education, who are just learning about qualitative research methods, evaluate the usefulness of such software?

Research Site

The University of California at Santa Barbara has a comprehensive research sequence of classes in both quantitative and qualitative research. The Department of Education is interested in new technology for teachers and is acquiring new equipment and setting up new environments in which students have access to this new technology. Because of the emphasis on computer technology and its usefulness to new students, we were interested in discovering how the new software for qualitative data analysis would be useful to students in our introductory class in qualitative research methods.

Students who were members of this class were engaged in the first quarter of a three sequence class on qualitative research methods. There were 26 students in this class which was divided into morning and evening sections. Twelve students attended in the morning and 14 the evening. There were 8 males and 18 females. All but 4 of the graduate students had already received their masters degree and were in the education doctoral program. Twelve students were in the Educational Psychology emphasis, 9 were in the Educational Leadership and Organization emphasis, and 5 students were in the Counseling/Clinical School Psychology emphasis.

This course was the first in a sequence of qualitative research courses. It was designed to cover a broad introduction to the nature of qualitative research and the various traditions. It included a variety of methods including ethnography, oral history, and case study. In addition, the course considered computer data management techniques with computer software specifically used in qualitative research. The two textbooks were Qualitative Research in Education by David Lancy and The Ethnographic Interview by James Spradley. Lecture and discussion of research theories and methods were discussed in relation to the qualitative research cycle as exemplified by Spradley's (1980) model of the Ethnographic Research Cycle. The aim of the course was to introduce students to several ways of doing qualitative research from the perspective of both theory and practice.

The course project was designed as a simulation of a study of the life of graduate students in education. Students in the course carried out a sequence of assignments that directed them to practice the steps in the research cycle. The project culminated with completion of a project notebook describing their work. To develop the project assignment, a pilot interview between two second year students was conducted and studied. The two students, David Jelinek and LeAnn Putney, interviewed each other using a protocol that was designed by the teaching assistants. The intention was to discover the possibilities of conducting an interview to learn about the life of graduate students and also to devise an interview questionnaire that would result in similar content across interviews. The two TA's and the two graduate students in the pilot evaluated the questions explored in the pilot and selected five questions to guide the interviews that students would conduct for the course project, as shown in Appendix 1. Thereafter, the students in the introductory qualitative research class tape recorded interviews of each other during the first meeting of the class using the questions designed in the pilot program as guides. After recording the interviews, students were shown how to use the transcribing machines in the department of education open access lab, and asked to use a word processor to record the transcription. Each transcription was copied into a computer file folder of all the interviews. Consequently, all students had this substantial set of discourse data to use for practicing data analysis.

Through lecture, readings, and demonstration, the students were introduced to theory of and techniques for data collection using the common tools of the researcher -- audio tape recording, transcribing machine, word processing software, field notes. Methods and techniques of data analysis, cut and paste, index cards and filing, pens and highlighters, and computer software for qualitative data analysis, were taught through lecture, readings, demonstration and in-class group practice. The software was introduced in a lab of thirty networked computers in the day time and again on one computer with students gathered around in the evening for those who could not make the day time lab. There were only two one hour introductions and a summary hand-out with references to the Help files that come with the software. This was minimal introduction, but it was all that could be done given the resources of the department at the time. The new computer lab wasn't ready until two months after the course was over.

Methods

Because of the nature of the questions we were asking, the decision was made to use ethnographic methods and techniques as a way of collecting, analyzing, and presenting data. Ethnographic practices were viewed as having at least four qualities that made it an appropriate method for researching how students, of varying backgrounds and ranges of computer knowledge, begin to understand and apply qualitative research methods and use a new software program to understand more fully the uses of qualitative research data. First, ethnography is the study of social situations (Heath, 1982) and classrooms are viewed in this study as having social and cultural practices. Second, ethnography is better suited to make visible the implicit social actions of teachers and students during classroom events. Third, because of the complexity of the question of how students learn to use computer software with qualitative data, the holistic manner in which ethnography approaches the study of different social situations (Lutz, 1981; Mehan, 1970) was seen as the best way of investigating computer use in this social setting. Finally, ethnography can provide multiple ways of exploring the data. Doing ethnography includes using a particular lens or perspective from which to view the data. Because only one perspective would not show the total picture, multiple lenses or multiple perspectives give a more complete picture (Green, 1992).

Experience of the Researchers

Four different experiential backgrounds provided different theoretical views of the data. These four views were represented by the students, the professor and the two teaching assistants. Information was collected about the student perspective from class notes of the class discussions, audio taped interviews of the students, surveys given to students during class, and written assignments that asked students to evaluate the process of using new software with qualitative data. All of these students were enrolled in a Department of Education M.A. or Ph.D. program.

From her past experience with teaching this course, Dr. Jenny Cook-Gumperz recognized the need of students to experience hands-on analysis of qualitative data and the importance of providing students with the newest technological tools. At the same time she viewed this course as only part of a larger circle of events which included the outside influences on the students, the institutional requirements of the university, the responsibility of teaching new students about qualitative research in a short period of time, and the complications of setting up and instructing students with new technology. She looked at this data from a sociolinguistic ethnographic perspective and always viewed the event in its contextual significance.

Two other perspectives were offered by the two teaching assistants. One had recent experience teaching in the public schools while the other had experience conducting seminars on uses of software for teaching and learning while working as an educational technology consultant, and so was able to add this technological viewpoint to the data analysis. Carolyn was the teaching assistant who had experience as a teaching assistant in other qualitative research classes and was working on an ethnographic project as a research assistant. Susan was the teaching assistant with computer expertise who also had experience as a teaching assistant for a course on educational technology for instruction for teaching credential students, and also had conducted qualitative research in her role as a research assistant for another professor.

Data Collection

Multiple methods of data collection were used in this study. The professor, the students, and the teaching assistants were simultaneously participants and participant observers in this project. It was known by everyone from the beginning that this was a new experience and that we all shared in the examination of its effectiveness. The students were told at the beginning of class that there was an ongoing study of the course project and the new software. Because the students understood that they would be expected to participate as well as observe, they were able to engage in reflective practice throughout the quarter. We collected the student perspective in three different ways. First, the students were asked to summarize and report on their use of the computer software and how it helped them investigate and experience the qualitative research cycle. Second, the students were surveyed as to their

opinions of the practicality and usefulness of the software. Finally, classrooms discussions of the study were tape recorded. These procedures produced many types of data: field notes and class notes, audio tape recordings of the interviews and audio tape recordings of the class discussions, surveys, course syllabus, student summaries, student projects, E-Mail between the students and the teaching assistant, and lecture notes by the professor, shown in Table 1.

There were four phases of the study. In the first phase the student project was planned by the instructor and the two teaching assistants. A pilot study was arranged during this time in order to understand the feasibility of graduate students interviewing each other and to develop an interview protocol for the course project. Also during this phase, TA2 researched different qualitative software programs to be used in the project. The second phase consisted of the implementation of the project as the students in this class interviewed each other on audio tape on the first class meeting using the interview protocol developed in the pilot program and were instructed in methods and ways of transcribing their interviews. Directions were given to the students about putting their transcribed interviews on disks in order to combine all the interviews into one computer folder to be shared with all students in the class so that all would have the whole data set. The third phase of the study involved readings, lectures, and hands-on activities with the developmental research cycle in order to build knowledge together about how qualitative researchers go about collecting, analyzing, and writing about research. The students discussed various ways of making sense of their data including searching for themes within the collection of interviews to answer the question of why their colleagues had decided to come to graduate school. The various methods included using paper-and-pencil, word processor, and the computer software, Folio Views (Folio & Corporation, 1994). The final phase of this study involved an evaluation period in which the students were asked to step back from their projects and reflect on the process. The students summarized their use of the different methods to analyze their data and commented on the qualitative research cycle. They were also surveyed as to their opinions concerning the different methods and a subsequent class discussion gave further time to evaluate and reflect.

Table 1

Timeline of Data Collection

	Summer Aug/Sept	October 1-15	October 16-31	November 1-15	November 16-30	December 1-5
Students						
Class notes		**********	**********	**********	**********	**********
Interviews						*******
Assignments		**********	**********		**********	**********
Surveys		*******				*******
Professor						
Planning	**********	**********	**********			
Implement		*******	*******	**********		
Evaluating		**********	**********	*******	**********	**********
TA 2						
Field notes	**********	**********	**********	**********	**********	**********
Observation	*******	*******	*******	*******	*******	******
TA 1						
Field notes	**********	**********	**********	**********	**********	**********
Journal	*******	*******	*******	*******	*******	*******

Data analysis

Data analysis and "data reduction" was an on-going part of the study including use of some descriptive matrices as described by Miles and Huberman (1984). Our question became bounded from the beginning because of our interest in teaching students qualitative research methods with and without the aid of computer software. Our data was reduced further by the fact that these two sections of the course were the only ones available to us during the time permitted and within the confines of our positions as professor and teaching assistants.

Further ways of coding and summarizing the accumulation of data was discovered as the two teaching assistants developed a system for "memoing" by talking/writing over E-Mail. Through this conceptualizing, further ideas of data analysis were used. Data was stored in three-ring binders and organized into different categories including surveys, class notes, field notes, interviews, names of students and their identification numbers, and E-Mail from the students. Charts were developed that displayed the number of interviews the students used in their data sets, whether or not they saw themselves as the instrument of research, and whether or not they wrote about theoretical perspective. Tables were used to display the number of categories each student discovered in their data set and the ways in which they had analyzed their discoveries. Student work was examined extensively to ascertain whether or not the students had an understanding of the research cycle. One of the consequences of this on-going data analysis was the decision to substantiate findings by asking students to complete a questionnaire about their previous experience with computers and their views of the software introduced in this course.

Constructing an Understanding of the Qualitative Research Cycle

Experiencing the Research Cycle.

Students experienced interviewing, transcribing, compiling, organizing, and the first steps of analysis of textual data -- becoming familiar with the data, forming initial questions to investigate; devising methods for marking categories and organizing and managing analyses or learning and utilizing the methods provided by a software program for qualitative data analysis. Some students developed charts to display the results of their analyses like the one by student 24, shown in Figure 1, in which a comparison was made of reasons for coming to graduate school between students in three different program emphases.

Figure 1
Example of a Student Created Chart

Reasons for Coming to Graduate School

CCSP	ELO	Ed. Psych
• research focus • always wanted to do it (personal) • needed more training for work • training needed for career	• needed for work • career • research interests • always wanted to (personal)	• career issues • enhance skills • personal • gain knowledge in a specific area • job related

Since the decision of how you work with data is based on your theoretical perspective, hypotheses that emerge from the data and your personal preferences for ways of working (e.g. using a word processor or paper and pencil), the variation in the findings from student analysis of the same data was expected. The students' initial application of all of the steps of the research cycle resulted in a range of depth of analyses. A variety of themes and categories emerged: "why attending graduate school, why chose UCSB, definition of graduate school, academia, challenges of graduate school, motives of graduate

school, social influences on career choice, career decision-making, time, children, counseling, advisors, work doing or want to do." Each theme resulted in a variety of multiple categories in each student's analysis. For instance seven students analyzed the data for reasons for attending graduate school which produced these major categories for which there were numerous subcategories: to do research, obtain knowledge, improve education systems/methods, get degree needed to do a desired job, financial reasons, improve life, personal desire/interest, cultural factors, influential people, supportive environment. By displaying the data in a matrix, as shown in Table 2, the influence of student perspectives was revealed. For one theme each student focused on a different combination of categories. Interestingly, no pattern of influence emerged from use of software.

Table 2

Categories from the theme, Why graduate school?

Category	*Student by ID#						
	FV4	FV16	FV21	17	20	24	25
to do research		X		X	X	X	
obtain knowledge			X	X	X	X	
improve educ. system/methods			X	X			
degree needed to do desired job	X	X	X	X	X	X	X
college professor	X	X	X				
higher ed. administration	X						
job advancement			X	X		X	X
financial reasons			X				
improve life				X	X		X
personal desire/interest			X			X	X
cultural factors			X				X
influential people			X				
supportive Environment							X

*Three used the computer software in their analysis (FV4, FV16, Fv21) ; four did not 17, 20, 24, 25.

Reentering the Research Cycle

Most of the students developed an understanding of the recursive, interactive-reactive (Zaharlick & Green, 1991) nature of the qualitative research cycle and the necessity to return to the field to gather more information after initial analysis. After working with the classroom interviews, one of the students developed hypotheses about experience in graduate school and identified how he would follow up on those ideas with more interview questions. The following is an excerpt from his paper:

> One of the first steps I would take in studying these hypotheses is to conduct additional interviews with more experienced (3+ years) UCSB graduate education students so that I might compare their answers or responses with those from the initial group of interviewees . . . . Spradley indicated in his study of tramps that "tramps" were not really experienced tramps until they had been a tramp for a number of years. Inexperienced tramps might give you different answers than experienced tramps because of their unfamiliarity with "tramp" culture. Perhaps, this is also true of inexperienced graduate students. Some of the descriptive types of questions to investigate this are: What are some of the reasons that you continue with graduate school? What are the reasons you choose to continue to attend UCSB? (Student 20)

All but one of the students reported in their final papers that they realized the need to reenter the field for further information. Some students wanted to go back to the interviewees again and clarify or delve deeper into certain issues.

> I think these statements and categories would be worth further exploration. If I was to continue with this study, I would first go back to the original data set and code the whole set for these types of statements. Second, I would want to ask the following focus questions to get more at the heart of the person's decision making process regarding graduate school and employment goals. 1. What is your eventual career goal? Where are you trying to get? 2. How did you decide that a Ph.D. would help you achieve that goal? 3. How did you decide that specifically the ELO Ph.D. would help you achieve that goal? (Student 1)

Use of Software in Qualitative Research

Half of the students chose to use the software in their analysis of the interviews. Comparison of student work did not reveal any patterns of influence of analysis with or without the software. However, all students indicated on the questionnaires that the software, Folio Views, would be valuable for management and analysis of large amounts of data. The mean score on a scale of 0 (not useful at all) to 5 (extremely useful) was 3.5. Only one student chose 1 and no students chose 0. These opinions were substantiated by field notes, class discussions, and analysis of student work. Furthermore, students who used the software found the searching and management features effective. These results were true for the group of all students with no difference between the a.m. and p.m. sections in spite of the fact that eight of the evening students only had a demonstration of the software, no hands-on instruction.

Not surprisingly, the students did not use many of the analysis features of the software. Discussions with students and observations by TA2 indicate that time, limited access to computers with the software, computer lab staff lack of familiarity with the software, and conflicts with other software installed on the same computer kept students from learning and using the software extensively. One student noted the capabilities that were not utilized.

> I believe that the power of the program isn't in its ability to re-style text to reflect what one thinks of it, which I think is what our initial impression of it was in light of the 'highlighter' method , but rather in the ability to search through text and define groupings, fields, and links between elements of text. (student 13)

Data were examined to look for possible constraints on analysis caused by using the software. The section of the course attended, years of experience with computers, and expertise with computers were not associated with a student's choice to use the computer software, shown in Appendix 3. On the other hand, the students and researchers observed a specific constraint on data analysis using the software -- the inability to view more than one full page at a time. Although a search for themes, categories, or fields will take the computer screen to each example in its full context at the user's discretion or group together each marked selection of text and the paragraph around it, one is still limited to the size of the monitor. As some students and the researchers noted, sometimes one wants to lay several full pages of related text out on the table to scan and compare.

During class discussions students suggested that learning how to use the software before being assigned the course project, perhaps in a separate lab offered in advance, would facilitate taking advantage of its capabilities. On the other hand, students, the TA s and the professor thought that students now understood the capabilities of the software so that when they do research in the future on a large amount of textual data, they might choose to make the effort to become skilled with the software.

Implications and Conclusions

This paper has described how a group of students and teachers in an introductory qualitative research methods course experienced an initial cycle of the research process. Specifically, the study has documented and explored how a course project could facilitate students practicing and beginning to understand the steps of the developmental research cycle. In addition, it has looked at ways in which computer software might impact the students' simulated study of graduate students enrolled in M.A./Ph.D. in education programs. The major implications from the study are that a course project can be an effective way to introduce students to qualitative research; the design of the course project was effective but specific ways to make it better emerged; and qualitative researchers could benefit from planning and exploring how to take advantage of the capabilities of computers.[1]

After realizing that the course project had provided students with the experience it was designed to, the researchers analyzed and discussed the reasons. We believe that the data gives evidence that students practiced the "how" of qualitative research which resulted in development of a beginning level of understanding of the "why" of qualitative research. That is, the researchers predict that the students will recall the course project as a concrete experience to build on when encountering concepts and understandings of qualitative research in the future. From the constructionist perspective it is important to give the concrete, contextual experience along with introduction to theory to facilitate building the knowledge of the expert (Bruner, 1990;). Both TA's have experienced this phenomenon of building understanding by tying theories and new examples to the initial experience with research. For both, the initial qualitative research experience was done with the feeling that " I really don't know what I am doing, I am just doing this because this is how I think I was told that it could be done." Later more experience, reading, and discussion with researchers provided meaning that reached back to the initial experience to expand its meaning and develop associated concepts. Not surprisingly, for the TA's teaching this course and doing this research project has been a part of that continuing process of building expertise. We believe the students in the course have been provided with this kind of initial experience through the course project. Brown expresses this idea well:

> The culture, its belief system and the way it uses its tools--whether they are manual or conceptual--determine the way practitioners see the world. And the resulting way the world appears reciprocally affects the belief system and the activity. Activity, culture, and tools form a complex, interdependent, and inseparable unit. Unfortunately, students are too often presented with only a part of this complex. They are asked to use the conceptual tools of a discipline without being able to look through its cultural eyeglasses. To learn to use tools as practitioners use them, students, like apprentices, must be enabled to enter that community and its culture. Thus, in a significant way, learning is, we believe, a process of enculturation (Brown, Collins & Duguid, 1988, p. 7).

We plan to investigate this prediction with follow-up interviews of the students in this course one year after the course -- Winter 1997.

Equally informative are the ideas that emerged for expanding and improving the "practitioner's" experience provided by the course project. For instance, more reflection on how perspective influences analysis could be encouraged by in-class discussions between students about their interpretations of the same data and about how theoretical perspective provides a lens to discover different interpretations of the same data. In a like manner students could experience and discuss the value of inter-rater reliability techniques.

Also important is the unexpected finding that emerged during the last stage of analysis of the data. We realized that the computer capabilities could be used to greater advantage for teaching and doing qualitative research. The students had word processed the transcriptions of the interviews and turned them

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[1] We wish to acknowledge with many thanks our colleague, LeAnn Putney, for her time , support, and assistance with editing.

in on computer disk so that all students could copy, print, or analyze in Folio Views the compiled large set of data as they preferred. We had taken advantage of the computer for this task. But, we didn't plan ahead for analysis of the whole study. If students had turned in their projects on computer disk, we could have analyzed them using the software. The step of typing student projects into the computer made it impractical to use the software. In addition, a portable computer could have been used to directly word process class notes and field notes, and to circulate in the classroom to have students record responses to the questionnaire. In our view these ideas are worth trying because of the time to be saved and the expansion of ways to work with the data, with computer software or not. Word processed data can be printed or not. So by using computers to make the initial record one has both formats to work with -- electronic format and printed format.

In conclusion, the limited scope of this study make it only an initial exploratory look at course projects that simulate the research cycle and the use of software for qualitative data analysis. Nevertheless, it has served to define possibilities and suggest questions to be investigated. Our follow-up interviews of the students next year will explore how students value the course project experience they had this year. Beyond this planned investigation could be studies exploring the many other questions that emerged from this study. What difference would the proposed changes or additions to the course project make to student understanding? How would other researchers plan for maximizing the use of the capabilities of computers? If student researchers have unlimited access, thorough training and technical support, what would be the effect on the use of the software in data analysis? How would experienced qualitative researchers evaluate the usefulness of the software? Would the same implications and conclusions result from studies in other contexts or on a larger scale?

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Appendix 1
Qualitative Data Analysis Lab
ED 221A Qualitative Research Methodology
Lab #1 Gathering Data: Guided Interview

Context

The purpose of this lab is to gather discourse data for students to use for practicing qualitative data analysis. Students will use the guided interview questions to interview each other. The interviews should be **recorded** on audio or videotape. The interviewer should **take notes** to facilitate transcription of the recording. (A side benefit is students getting to know each other.)

Directions

Working in pairs, students will take turns being interviewer and interviewee, so that every student is interviewed. The interviewer asks the questions below and speaks as little as possible. Prompting should be used cautiously. The purpose is to encourage the interviewee to speak at length. At least ten minutes should be recorded for each interview.

Interview Questions

1. What brought you to graduate school? why?
   What factors drew you to UCSB?

2. What emphasis are you in and what courses are you taking? why?
   What do you expect to learn? why?

3. How long do you think it will take to get your degree? why?

4. How is it looking so far? What are you thinking of the program?

5. So when you finish the Ph.D., what would be your next step into a career?
   why? and how?

Appendix 2
Selecting Software

Last summer TA2 researched software available for qualitative data analysis. The best book of reviews that she found is Weitzman, E. A., & Miles, M. B. (1995), Computer Programs for Qualitative Data Analysis. The two authors thoroughly reviewed all available software for Mac, Windows, and DOS by doing an analysis of qualitative data, text, with each program. Then demonstrations of several of the programs that were available on all three platforms were obtained and evaluated. After trying out the demonstrations, Folio Views proved to offer the most tools for analysis with a flexible graphical user interface with a comfortable WYSIWYG format (What You See Is What You Get). Text can be imported and organized with a Table of Contents format that allows instant access to any place in the data by pointing and clicking with the mouse. The search and index features are extensive. The "field" tool allows you to define categories/domains with a color code that can be applied to any amount of text anywhere in the data. "Fields" can be searched and print outs made of the search results. These are the main features that we found make it a valuable tool for working with large sets of text.

> A friendly, intuitive, free-form textbase manager with fast and powerful searching, extensive hypertext, hierarchical outlining, free-form fields, code-and-retrieve capabilities, and memoing and annotation, all in a WYSIWYG format (What You See Is What You Get). Text viewed on the screen is formatted exactly as it will be printed (paragraphing, margins, and so on) [Weitzman 1995] . . . . This easy-to-learn easy-to-use textbase manager is clearly the best in its class and is also an excellent text retriever and code-and retrieve program. For heavy-duty theoretical work, you may prefer a program like ATLAS/ti or NUD•IST, though VIEWS does have excellent memoing outlining, and system closure facilities. But the integration of sophisticated textbase management with powerful text search, sophisticated coding and retrieval, and extensive hypertexting capabilities make this program well worth considering for many qualitative researchers. It's especially good for "disorderly" projects where you're (for example) interviewing *and* observing *and* documenting with many individuals per site, writing memos, doing successive analyses on the results of earlier analyses, and so on, and where you may not need or want a tight coding scheme (Weitzman 1995).

Strengths

- easy to learn and easy to use
- keeps your data in front of you at all times
- imports directly from Microsoft Word or else ASCII text
- object Manager and storing and organizing of anything you can paste in graphics, charts, equations, animation, video, sound. . . .
- color coded highlighting of any size chunk of text linked to pop up memo fields
- graphical tool bar interface
- helpful features for theory-building - memoing and annotating, extensive hypertexting, searching and grouping the results
- excellent output/reports formatting

Limitations

- no graphic mapping for theory building
- the demo program will not allow use and manipulation of data.

Appendix 3 Use / Not Use Folio Views for Analysis (FV = 0 or 1)

ID	class	skill	yrs	pltfrm	home	data	PP	W P	FV	FVrank	FV plus	FV minus
9	pm	15	7	mac	mac	15	1	1	0	1		distance from data
11	pm	13	1	mac	mac	6	1	1	0	2		need expertise
25	pm	24	5	win	0	11	1	1	0	2		need expertise
24	pm	20	7	mac	mac	9	1	1	0	2	organize large dataset	need easier
22	pm	19	10	win,dos	win,dos	10	1	1	0	2		need Win
10	am	19	7	mac	mac	12	0	1	0	3		need expertise
27	pm	23	7	win,mac	0	5	1	1	0	4		depends on data
20	pm	22	9	mac	mac	25	1	1	0	4		access
18	pm	11	1	win	win	10	1	1	0	5		need expertise
8	am	14	1	mac	mac	10	1	0	0	5	organize large datasets	need expertise
15	pm	15	2	0	0	6	1	1	0	5	organize large datasets	need expertise
6	am	13	8	mac,win	0	10	1	0	0	5	organize large datasets	need expertise
19	am	5	0	0	0	10	1	1	0	NA	organize large datasets	need expertise
17	am	14	5	mac,win	mac	8		1	1	2	organize large datasets	need expertise
12	am	18	12	mac,win	mac	10	1	1	1	2	organize large datasets	lab time
21	pm	14	2	mac,dos	0	5	1	1	1	3		need expertise
23	pm	16	3	win,dos	win	8	0	1	1	3		need expertise & access
29	am	13	7	mac	mac	12	1	1	1	3	organize large dataset	need expertise
2	am	11	1	mac	0	8	0	0	1	4	save time	need expertise
16	pm	17	10	mac	mac	5	0	0	1	4	rapid searching	crashing
3	am	21	10	mac,win	mac	25	1	1	1	4	organize large datasets	crashing
13	pm	24	14	mac,win,dos	win,dos	25	1	1	1	4	rapid searching	0
28						5	0	0	1	4	more manageable	need expertise & access
4	am	18	7	mac	mac	25	1	1	1	5	organize data	need expertise
1	am	24	10	mac,win	mac	25	1	1	1	5		more lab time

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